

thereof. Examples of polygon-based bioptical laser scanning systems are disclosed in ~~US Patent Nos. 4,229,588~~ and US Patent No. 4,652,732, assigned to NCR, Inc., ~~each~~ and incorporated herein by reference in its entirety.

AMENDMENT OF THE CLAIMS:

Please cancel claims 1-4, 8, 9, 10, 12 and 13 without prejudice or disclaimer and amend Claims 1, 5-7, 11 and 14 as follows:

Claim 5 (currently amended): ~~The A~~ A laser scanning system ~~of claim 4, comprising:~~

a photodetector for detecting the intensity of a light beam reflected and/or scattered off a bar code symbol consisting of bars and spaces of different light reflectivity, and generating an analog scan data signal representative of the detected intensity of the reflected and/or scattered light beam; and

a scan data signal processor having a plurality of signal processing paths,

wherein each said signal processing path includes circuitry for processing said analog scan data signal generated from said photodetector so as to detect the presence of and transitions in the bars and spaces associated with the bar code symbol scanned by said light beam, and generate a digital scan data signal having first and second signal levels corresponding to the bars and spaces associated with the bar code symbol scanned by said light beam;

wherein each said signal processing path in said plurality of signal processing paths has different operational characteristics; and

wherein each said signal processing path includes a peak detector that identifies time periods during which a first derivative signal, derived from said analog scan data signal, exceeds at least one threshold level,

wherein the at least one threshold level for one of the respective signal processing paths is different than the at least one threshold level for another of the respective signal processing paths;

wherein the at least one threshold level for a respective signal processing path is a dynamic threshold that changes as said first derivative signal changes; and

wherein the dynamic threshold is based upon a DC bias value and a portion of the said first derivative signal.

Claim 6 (currently amended): ~~The~~ A laser scanning system ~~of claim 1~~, comprising:

a photodetector for detecting the intensity of a light beam reflected and/or scattered off a bar code symbol consisting of bars and spaces of different light reflectivity, and generating an analog scan data signal representative of the detected intensity of the reflected and/or scattered light beam; and

a scan data signal processor having a plurality of signal processing paths,

wherein each said signal processing path includes circuitry for processing said analog scan data signal generated from said photodetector so as to detect the presence of and transitions in the bars and spaces associated with the bar code symbol scanned by said light beam, and generate a digital scan data signal having first and second signal levels corresponding to the bars and spaces associated with the bar code symbol scanned by said light beam;

wherein each said signal processing path in said plurality of signal processing paths has different operational characteristics; and

wherein each said signal processing path performs low pass filtering, and

wherein cut-off frequency of such low pass filtering for one of the respective signal processing paths is different than the cut-off frequency of such low pass filtering for another of the respective signal processing paths.

Claim 7 (currently amended): ~~The~~ A laser scanning system ~~of claim 1~~, comprising:

a photodetector for detecting the intensity of a light beam reflected and/or scattered off a bar code symbol consisting of bars and spaces of different light reflectivity, and generating an analog scan data signal representative of the detected intensity of the reflected and/or scattered light beam; and

a scan data signal processor having a plurality of signal processing paths,

wherein each said signal processing path includes circuitry for processing said analog scan data signal generated from said photodetector so as to detect the presence of and transitions in the bars and spaces associated with the bar code symbol scanned by said light beam, and generate a digital scan data signal having first and second signal levels corresponding to the bars and spaces associated with the bar code symbol scanned by said light beam;

wherein each said signal processing path in said plurality of signal processing paths has different operational characteristics;

wherein each said signal processing path performs voltage amplification, and
wherein gain of such voltage amplification for one of the respective signal processing
paths is different than gain of such voltage amplification for another of the respective signal
processing paths.

Claims 8-10 (canceled)

Claim 11 (currently amended): ~~The A~~ laser scanning system ~~of claim 1~~, comprising:

a photodetector for detecting the intensity of a light beam reflected and/or scattered off a
bar code symbol consisting of bars and spaces of different light reflectivity, and generating an
analog scan data signal representative of the detected intensity of the reflected and/or scattered
light beam; and

a scan data signal processor having a plurality of signal processing paths,

wherein each said signal processing path includes circuitry for processing said analog
scan data signal generated from said photodetector so as to detect the presence of and transistions
in the bars and spaces associated with the bar code symbol scanned by said light beam, and
generate a digital scan data signal having first and second signal levels corresponding to the bars
and spaces associated with the bar code symbol scanned by said light beam;

wherein each said signal processing path in said plurality of signal processing paths has
different operational characteristics; and

wherein each said signal processing path includes zero crossing circuitry that identifies
zero crossings in a second derivative signal, derived from the said analog scan data signal, and
data gate logic that gates ~~such~~ said zero crossings to output only those zero crossings that occur
substantially concurrent with a peak in a ~~second~~ first derivative signal derived from the said
analog scan data signal.

Claims 12-13 (canceled)

Claim 14 (currently amended): ~~The A~~ laser scanning system ~~of claim 13~~, comprising:

a photodetector for detecting the intensity of a light beam reflected and/or scattered off a
bar code symbol consisting of bars and spaces of different light reflectivity, and generating an

analog scan data signal representative of the detected intensity of the reflected and/or scattered light beam; and

a scan data signal processor having a plurality of signal processing paths,

wherein each said signal processing path includes circuitry for processing said analog scan data signal generated from said photodetector so as to detect the presence of and transitions in the bars and spaces associated with the bar code symbol scanned by said light beam, and generate a digital scan data signal having first and second signal levels corresponding to the bars and spaces associated with the bar code symbol scanned by said light beam;

wherein each said signal processing path in said plurality of signal processing paths has different operational characteristics; and

wherein each said signal processing path is performed concurrently using digital signal processing circuitry; and

wherein each said signal processing path is performed sequentially based on real-time status of a working buffer that stores data values for processing.